



CPI-004DVCP3CN
SEQUENCE LISTING

<110> Johnson, Gary L.

<120> Method And Product For Regulating Cell Responsiveness To
External Signals

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<141> 2000-06-30

<150> 08/440,421

<151> 1995-05-15

<150> 08/323,460

<151> 1994-10-14

<150> 08/049,254

<151> 1993-04-15

<150> 08/410,602

<151> 1995-03-24

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gag Glu	gac Asp	att Ile	tct Ser	gac Asp 100	aga Arg	ctg Leu	gcc Ala	ggc Gly	gtc Val 105	tct Ser	gta Val	gga Gly	ctt Leu	ccc Pro 110	agc Ser	818
tca Ser	aca Thr	aca Thr	aca Thr 115	gaa Glu	caa Gln	cca Pro	aag Lys	cca Pro 120	gcg Ala	gtt Val	caa Gln	aca Thr	aaa Lys 125	ggc Gly	aga Arg	866
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 Thr Ser Cys Leu Glu Asn Ser Ser Leu Glu His Thr Val His Arg Glu
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 Asp Ile Ser Asp Arg Leu Ala Gly Val Ser Val Gly Leu Pro Ser Ser
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 Thr Thr Thr Glu Gln Pro Lys Pro Ala Val Gln Thr Lys Gly Arg Pro
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 Ile Ser Lys His Arg Pro Gln Ala Phe Val Pro Cys Lys Ile Pro Ser
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 Ala Ser Pro Gln Thr Gln Arg Lys Phe Ser Leu Gln Phe Gln Arg Asn
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 Cys Ser Glu His Arg Asp Ser Asp Gln Leu Ser Pro Val Phe Thr Gln
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290

295

300

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aat Asn	aga Arg	gag Glu	cct Pro 580	tta Leu	ata Ile	tgt Cys	ccc Pro	ctt Leu 585	tgt Cys	aga Arg	tct Ser	aag Lys	tgg Trp 590	aga Arg	tcc Ser	1776
cat His	gac Asp	ttc Phe 595	tac Tyr	agc Ser	cat His	gag Glu	tta Leu 600	tca Ser	agc Ser	ccc Pro	gtg Val 605	gag Glu	tcc Ser	ccc Pro	gcc Ala	1824
tcc Ser 610	ctg Leu	cga Arg	gct Ala	gtc Val	cag Gln	cag Gln 615	cca Pro	tcc Ser	tcc Ser	ccg Pro	cag Gln 620	cag Gln	ccc Pro	gtg Val	gcc Ala	1872
gga Gly 625	tca Ser	cag Gln	cgg Arg	agg Arg	aat Asn 630	cag Gln	gag Glu	agc Ser	agt Ser	ttt Phe 635	aac Asn	ctt Leu	act Thr	cat His	ttt Phe 640	1920
gga Gly	acc Thr	cag Gln	cag Gln	att Ile 645	cct Pro	tcc Ser	gct Ala	tac Tyr	aaa Lys 650	gat Asp	ttg Leu	gcc Ala	gag Glu	cca Pro 655	tgg Trp	1968
att Ile	cag Gln	gtg Val	ttt Phe 660	gga Gly	atg Met	gaa Glu	ctc Leu	gtt Val 665	ggc Gly	tgc Cys	tta Leu	ttc Phe	tct Ser 670	aga Arg	aac Asn	2016
tgg Trp	aac Asn	gta Val	agg Arg	gaa Glu	atg Met	gcc Ala	ctt Leu	agg Arg	cgt Arg	ctt Leu	tcc Ser	cac His	gac Asp	gtt Val	agt Ser	2064

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675						680					685						
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ccc Pro	agc Ser	atc Ile	tca Ser	ggg Gly 725	gat Asp	gtg Val	gtg Val	gag Glu	gcg Ala 730	tgc Cys	tgc Cys	agt Ser	gtc Val	ctg Leu 735	tct Ser	2208	
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aga Arg	atc Ile 770	aaa Lys	ctt Leu	cag Gln	aga Arg	ctc Leu 775	ctc Leu	cgg Arg	cca Pro	gtt Val	gta Val 780	gac Asp	act Thr	atc Ile	ctt Leu	2352	
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cct Pro 865	gct Ala	gaa Glu	ttc Phe	tat Tyr	cct Pro 870	cat His	att Ile	gtc Val	agt Ser	act Thr 875	gat Asp	gtc Val	tca Ser	caa Gln	gct Ala 880	2640	
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gcc Ala	ttg Leu	caa Gln	tcc Ser 900	att Ile	gac Asp	aat Asn	tcc Ser	cac His 905	tcg Ser	atg Met	gtt Val	ggc Gly	aag Lys 910	ctc Leu	tct Ser	2736	
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Val	Phe	Ser	Lys	Leu	Val	Thr	Met	Leu	Asn	Ala	Ser	Gly	Ser	Thr	His	
930						935					940					
ttc	acc	agg	atg	cgc	cgg	cgt	ctg	atg	gct	atc	gcg	gat	gag	gta	gaa	2880
Phe	Thr	Arg	Met	Arg	Arg	Arg	Leu	Met	Ala	Ile	Ala	Asp	Glu	Val	Glu	
945					950					955					960	
att	gcc	gag	gtc	atc	cag	ctg	ggc	gtg	gag	gac	act	gtg	gat	ggg	cat	2928
Ile	Ala	Glu	Val	Ile	Gln	Leu	Gly	Val	Glu	Asp	Thr	Val	Asp	Gly	His	
				965					970					975		
cag	gac	agc	tta	cag	gcc	gtg	gcc	ccc	acc	agc	tgt	cta	gaa	aac	agc	2976
Gln	Asp	Ser	Leu	Gln	Ala	Val	Ala	Pro	Thr	Ser	Cys	Leu	Glu	Asn	Ser	
			980					985					990			
tcc	ctt	gag	cac	aca	gtc	cat	aga	gag	aaa	act	gga	aaa	gga	cta	agt	3024
Ser	Leu	Glu	His	Thr	Val	His	Arg	Glu	Lys	Thr	Gly	Lys	Gly	Leu	Ser	
		995					1000					1005				
gct	acg	aga	ctg	agt	gcc	agc	tcg	gag	gac	att	tct	gac	aga	ctg	gcc	3072
Ala	Thr	Arg	Leu	Ser	Ala	Ser	Ser	Glu	Asp	Ile	Ser	Asp	Arg	Leu	Ala	
	1010					1015					1020					
ggc	gtc	tct	gta	gga	ctt	ccc	agc	tca	aca	aca	aca	gaa	caa	cca	aag	3120
Gly	Val	Ser	Val	Gly	Leu	Pro	Ser	Ser	Thr	Thr	Thr	Glu	Gln	Pro	Lys	
	1025				1030					1035					1040	
cca	gcg	gtt	caa	aca	aaa	ggc	aga	ccc	cac	agt	cag	tgt	ttg	aac	tcc	3168
Pro	Ala	Val	Gln	Thr	Lys	Gly	Arg	Pro	His	Ser	Gln	Cys	Leu	Asn	Ser	
				1045					1050					1055		
tcc	cct	ttg	tct	cat	gct	caa	tta	atg	ttc	cca	gca	cca	tca	gcc	cct	3216
Ser	Pro	Leu	Ser	His	Ala	Gln	Leu	Met	Phe	Pro	Ala	Pro	Ser	Ala	Pro	
			1060					1065					1070			
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Cys	Ser	Ser	Ala	Pro	Ser	Val	Pro	Asp	Ile	Ser	Lys	His	Arg	Pro	Gln	
		1075					1080					1085				
gca	ttt	gtt	ccc	tgc	aaa	ata	cct	tcc	gca	tct	cct	cag	aca	cag	cgc	3312
Ala	Phe	Val	Pro	Cys	Lys	Ile	Pro	Ser	Ala	Ser	Pro	Gln	Thr	Gln	Arg	
	1090					1095					1100					
aag	ttc	tct	cta	caa	ttc	cag	agg	aac	tgc	tct	gaa	cac	cga	gac	tca	3360
Lys	Phe	Ser	Leu	Gln	Phe	Gln	Arg	Asn	Cys	Ser	Glu	His	Arg	Asp	Ser	
	1105				1110					1115					1120	
gac	cag	ctc	tcc	cca	gtc	ttc	act	cag	tca	aga	ccc	cca	ccc	tcc	agt	3408
Asp	Gln	Leu	Ser	Pro	Val	Phe	Thr	Gln	Ser	Arg	Pro	Pro	Pro	Ser	Ser	
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aac	ata	cac	agg	cca	aag	cca	tcc	cga	ccc	gtt	ccg	ggc	agt	aca	agc	3456
Asn	Ile	His	Arg	Pro	Lys	Pro	Ser	Arg	Pro	Val	Pro	Gly	Ser	Thr	Ser	
			1140					1145					1150			
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Lys	Leu	Gly	Asp	Ala	Thr	Lys	Ser	Ser	Met	Thr	Leu	Asp	Leu	Gly	Ser	
		1155					1160					1165				
gct	tcc	agg	tgt	gac	gac	agc	ttt	ggc	ggc	ggc	ggc	aac	agt	ggc	aac	3552
Ala	Ser	Arg	Cys	Asp	Asp	Ser	Phe	Gly	Gly	Gly	Gly	Asn	Ser	Gly	Asn	
	1170					1175					1180					

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gcc gtc ata ccc agc gac gag aca gtg ttc acg ccg gtg gag gac aag Ala Val Ile Pro Ser Asp Glu Thr Val Phe Thr Pro Val Glu Asp Lys 1185 1190 1195 1200	3600
tgc agg tta gat gtg aac acc gag ctc aac tcc agc atc gag gac ctt Cys Arg Leu Asp Val Asn Thr Glu Leu Asn Ser Ser Ile Glu Asp Leu 1205 1210 1215	3648
ctt gaa gca tcc atg cct tca agt gac acg aca gtc act ttc aag tcc Leu Glu Ala Ser Met Pro Ser Ser Asp Thr Thr Val Thr Phe Lys Ser 1220 1225 1230	3696
gaa gtc gcc gtc ctc tct ccg gaa aag gcc gaa aat gac gac acc tac Glu Val Ala Val Leu Ser Pro Glu Lys Ala Glu Asn Asp Asp Thr Tyr 1235 1240 1245	3744
aaa gac gac gtc aat cat aat caa aag tgc aaa gaa aag atg gaa gct Lys Asp Asp Val Asn His Asn Gln Lys Cys Lys Glu Lys Met Glu Ala 1250 1255 1260	3792
gaa gag gag gag gct tta gcg atc gcc atg gcg atg tca gcg tct cag Glu Glu Glu Glu Ala Leu Ala Ile Ala Met Ala Met Ser Ala Ser Gln 1265 1270 1275 1280	3840
gat gcc ctc ccc atc gtc cct cag ctg cag gtg gaa aat gga gaa gat Asp Ala Leu Pro Ile Val Pro Gln Leu Gln Val Glu Asn Gly Glu Asp 1285 1290 1295	3888
att atc atc att cag cag gac aca cca gaa act ctt cca gga cat acc Ile Ile Ile Ile Gln Gln Asp Thr Pro Glu Thr Leu Pro Gly His Thr 1300 1305 1310	3936
aaa gcg aaa cag cct tac aga gaa gac gct gag tgg ctg aaa ggc cag Lys Ala Lys Gln Pro Tyr Arg Glu Asp Ala Glu Trp Leu Lys Gly Gln 1315 1320 1325	3984
cag ata ggc ctc gga gca ttt tct tcc tgt tac caa gca cag gat gtg Gln Ile Gly Leu Gly Ala Phe Ser Ser Cys Tyr Gln Ala Gln Asp Val 1330 1335 1340	4032
ggg act ggg act tta atg gct gtg aaa cag gtg acg tac gtc aga aac Gly Thr Gly Thr Leu Met Ala Val Lys Gln Val Thr Tyr Val Arg Asn 1345 1350 1355 1360	4080
aca tcc tcc gag cag gag gag gtg gtg gaa gcg ttg agg gaa gag atc Thr Ser Ser Glu Gln Glu Glu Val Val Glu Ala Leu Arg Glu Glu Ile 1365 1370 1375	4128
cgg atg atg ggt cac ctc aac cat cca aac atc atc cgg atg ctg ggg Arg Met Met Gly His Leu Asn His Pro Asn Ile Ile Arg Met Leu Gly 1380 1385 1390	4176
gcc acg tgc gag aag agc aac tac aac ctc ttc att gag tgg atg gcg Ala Thr Cys Glu Lys Ser Asn Tyr Asn Leu Phe Ile Glu Trp Met Ala 1395 1400 1405	4224
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tca gtc gtc att aac tac act gag cag tta ctg cgt ggc ctt tcc tat Ser Val Val Ile Asn Tyr Thr Glu Gln Leu Leu Arg Gly Leu Ser Tyr 1425 1430 1435 1440	4320

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 Leu His Glu Asn Gln Ile Ile His Arg Asp Val Lys Gly Ala Asn Leu
 1445 1450 1455

ctc att gac agc acc ggt cag agg ctg aga att gca gac ttt gga gct 4416
 Leu Ile Asp Ser Thr Gly Gln Arg Leu Arg Ile Ala Asp Phe Gly Ala
 1460 1465 1470

gct gcc agg ttg gca tca aaa gga acc ggt gca gga gag ttc cag gga 4464
 Ala Ala Arg Leu Ala Ser Lys Gly Thr Gly Ala Gly Glu Phe Gln Gly
 1475 1480 1485

cag tta ctg ggg aca att gca ttc atg gcg cct gag gtc cta aga ggt 4512
 Gln Leu Leu Gly Thr Ile Ala Phe Met Ala Pro Glu Val Leu Arg Gly
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 Gln Gln Tyr Gly Arg Ser Cys Asp Val Trp Ser Val Gly Cys Ala Ile
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 Ile Glu Met Ala Cys Ala Lys Pro Pro Trp Asn Ala Glu Lys His Ser
 1525 1530 1535

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 Asn His Leu Ala Leu Ile Phe Lys Ile Ala Ser Ala Thr Thr Ala Pro.
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 Ser Ile Pro Ser His Leu Ser Pro Gly Leu Arg Asp Val Ala Val Arg
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tgc tta gaa ctt cag cct cag gac cgg cct ccg tcc aga gag ctg ctg 4752
 Cys Leu Glu Leu Gln Pro Gln Asp Arg Pro Pro Ser Arg Glu Leu Leu
 1570 1575 1580

aaa cat ccg gtc ttc cgt acc acg tgg tagttaattg ttcagatcag 4799
 Lys His Pro Val Phe Arg Thr Thr Trp
 1585 1590

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Arg Pro Gly Cys₂₀ Ser Ala Gln Arg Pro₂₅ Ala Pro Gly Ser Pro₃₀ His Cys

Pro Cys Pro₃₅ Pro Thr Cys Ala Ala₄₀ Arg Pro Pro Ala Ala₄₅ Pro Arg Ser

Arg Ala Pro Ala Gly Arg Arg₅₅ Gly Pro Ala Arg Ala₆₀ Arg Ala Arg Ala

Leu Gly Ser Ser Ala Arg₇₀ Pro Pro Thr Arg Pro₇₅ Pro Leu Arg Pro Pro₈₀

Pro Ala Leu Ser Pro₈₅ Pro Pro Pro Ser Pro₉₀ Ala Gly Thr Ser Glu Cys₉₅

Ser Pro Arg Glu₁₀₀ Lys Met Ala Ala Ala₁₀₅ Ala Gly Asp Arg Ala₁₁₀ Ser Ser

Ser Gly Phe₁₁₅ Pro Gly Ala Ala Ala₁₂₀ Ala Ser Pro Glu Ala₁₂₅ Gly Gly Gly

Gly Gly Gly Gly Gly Ala Leu₁₃₅ Gln Gly Ser Gly Ala₁₄₀ Pro Ala Ala Gly

Ala Ala Gly Leu Leu Arg₁₅₀ Glu Pro Gly Ser Ala₁₅₅ Gly Pro Ser Ala Arg₁₆₀

Thr Gly Gly Gly Gly₁₆₅ Thr Cys Ala Lys Cys₁₇₀ Gly Val Trp Ser Trp₁₇₅ Thr

Ser Cys Arg Ser₁₈₀ Ser Arg Ser Ser Ser₁₈₅ Pro Pro Pro Arg Arg₁₉₀ Pro Ala

His Leu Leu₁₉₅ Pro Val Ala Gly Ala₂₀₀ Arg Gly Arg Gly Cys₂₀₅ Arg Ser Glu

Ser Leu₂₁₀ Pro Ala Arg Ala Gly₂₁₅ Pro Pro Pro Pro Gly₂₂₀ Ala Ala Ser Arg

Cys Gly Ser His Ser₂₃₀ Ala Glu Leu Ala Ala₂₃₅ Arg Asp Ser Gly Ala₂₄₀

Arg Ser Pro Ala Gly₂₄₅ Ala Glu Pro Pro Ser₂₅₀ Ala Ala Ala Pro Ser₂₅₅ Gly

Arg Glu Met Glu₂₆₀ Asn Lys Glu Thr Leu₂₆₅ Lys Gly Leu His Lys₂₇₀ Met Glu

Asp Arg Pro Glu Glu Arg Met Ile Arg Glu Lys Leu Lys Ala Thr Cys

275					280					285					
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Pro	Val	Val	Val	Lys	Pro	Ile	Pro	Ile	Lys	Gly	Asp	Gly	Ser	Glu	Val
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Asn	Asn	Leu	Ala	Ala	Glu	Pro	Gln	Gly	Glu	Gly	Gln	Ala	Gly	Ser	Ala
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Arg	Arg	Val	Asn	Lys	Val	Met	Arg	Ala	Arg	Leu	Tyr	Leu	Leu	Gln	Gln
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Ile	Gly	Pro	Asn	Ser	Phe	Leu	Ile	Gly	Gly	Asp	Ser	Pro	Asp	Asn	Lys
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Pro	Ser	Asp	Pro	Met	Leu	Trp	Arg	Lys	Thr	Leu	Lys	Asn	Phe	Glu	Val
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Glu	Ser	Leu	Phe	Gln	Lys	Tyr	His	Ser	Arg	Arg	Ser	Ser	Arg	Ile	Lys
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Ala	Pro	Ser	Arg	Asn	Thr	Ile	Gln	Lys	Phe	Val	Ser	Arg	Met	Ser	Asn
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Ser	His	Thr	Leu	Ser	Ser	Ser	Ser	Thr	Ser	Thr	Ser	Ser	Ser	Glu	Asn
		515						520					525		
Ser	Ile	Lys	Asp	Glu	Glu	Glu	Gln	Met	Cys	Pro	Ile	Cys	Leu	Leu	Gly
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Met	Leu	Asp	Glu	Glu	Ser	Leu	Thr	Val	Cys	Glu	Asp	Gly	Cys	Arg	Asn
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Lys	Leu	His	His	His	Cys	Met	Ser	Ile	Trp	Ala	Glu	Glu	Cys	Arg	Arg
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Asn	Arg	Glu	Pro	Leu	Ile	Cys	Pro	Leu	Cys	Arg	Ser	Lys	Trp	Arg	Ser
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His	Asp	Phe	Tyr	Ser	His	Glu	Leu	Ser	Ser	Pro	Val	Glu	Ser	Pro	Ala
		595					600					605			
Ser	Leu	Arg	Ala	Val	Gln	Gln	Pro	Ser	Ser	Pro	Gln	Gln	Pro	Val	Ala

610					615					620					
Gly 625	Ser	Gln	Arg	Arg	Asn 630	Gln	Glu	Ser	Ser	Phe 635	Asn	Leu	Thr	His	Phe 640
Gly	Thr	Gln	Gln	Ile 645	Pro	Ser	Ala	Tyr	Lys 650	Asp	Leu	Ala	Glu	Pro 655	Trp
Ile	Gln	Val	Phe 660	Gly	Met	Glu	Leu	Val 665	Gly	Cys	Leu	Phe	Ser 670	Arg	Asn
Trp	Asn	Val 675	Arg	Glu	Met	Ala	Leu 680	Arg	Arg	Leu	Ser	His 685	Asp	Val	Ser
Gly	Ala 690	Leu	Leu	Leu	Ala	Asn 695	Gly	Glu	Ser	Thr	Gly 700	Asn	Ser	Gly	Gly
Gly 705	Ser	Gly	Gly	Ser	Leu 710	Ser	Ala	Gly	Ala	Ala 715	Ser	Gly	Ser	Ser	Gln 720
Pro	Ser	Ile	Ser	Gly 725	Asp	Val	Val	Glu	Ala 730	Cys	Cys	Ser	Val	Leu 735	Ser
Ile	Val	Cys	Ala 740	Asp	Pro	Val	Tyr	Lys 745	Val	Tyr	Val	Ala	Ala 750	Leu	Lys
Thr	Leu	Arg 755	Ala	Met	Leu	Val	Tyr 760	Thr	Pro	Cys	His	Ser 765	Leu	Ala	Glu
Arg	Ile 770	Lys	Leu	Gln	Arg	Leu 775	Leu	Arg	Pro	Val	Val 780	Asp	Thr	Ile	Leu
Val 785	Lys	Cys	Ala	Asp	Ala 790	Asn	Ser	Arg	Thr	Ser 795	Gln	Leu	Ser	Ile	Ser 800
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Glu	Leu 850	Leu	Gly	Arg	Leu	Cys 855	Leu	Ile	Asp	Arg	Leu 860	Leu	Leu	Glu	Phe
Pro 865	Ala	Glu	Phe	Tyr	Pro 870	His	Ile	Val	Ser	Thr 875	Asp	Val	Ser	Gln	Ala 880
Glu	Pro	Val	Glu	Ile 885	Arg	Tyr	Lys	Lys	Leu 890	Leu	Ser	Leu	Leu	Thr 895	Phe
Ala	Leu	Gln	Ser 900	Ile	Asp	Asn	Ser	His 905	Ser	Met	Val	Gly	Lys 910	Leu	Ser
Arg	Arg	Ile 915	Tyr	Leu	Ser	Ser	Ala 920	Arg	Met	Val	Thr	Ala 925	Val	Pro	Ala
Val	Phe 930	Ser	Lys	Leu	Val	Thr 935	Met	Leu	Asn	Ala	Ser 940	Gly	Ser	Thr	His
Phe	Thr	Arg	Met	Arg	Arg	Arg	Leu	Met	Ala	Ile	Ala	Asp	Glu	Val	Glu

945 950 955 960
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 Glu Glu Glu Glu Ala Leu Ala Ile Ala Met Ala Met Ser Ala Ser Gln
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 Asp Ala Leu Pro Ile Val Pro Gln Leu Gln Val Glu Asn Gly Glu Asp

1285

1290

1295

Ile Ile Ile Ile Gln Gln Asp Thr Pro Glu Thr Leu Pro Gly His Thr
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 Gln Ile Gly Leu Gly Ala Phe Ser Ser Cys Tyr Gln Ala Gln Asp Val
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 Arg Met Met Gly His Leu Asn His Pro Asn Ile Ile Arg Met Leu Gly
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agaaccattt tcctaatttt caaattattg agctggtcgc gcata atg gat gat cag 477
                                     Met Asp Asp Gln
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caa gct ttg aat tca atc atg caa gat ttg gct gtc ctt cat aag cca 525
Gln Ala Leu Asn Ser Ile Met Gln Asp Leu Ala Val Leu His Lys Pro
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gtc ggc cag cat tat ctt tac aag aaa cca gga aag caa aac ctt cat 573
Val Gly Gln His Tyr Leu Tyr Lys Lys Pro Gly Lys Gln Asn Leu His
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cac caa aaa aac aga atg atg ttc gag tca aat ttg aac ata gag gag 621
His Gln Lys Asn Arg Met Met Phe Glu Ser Asn Leu Asn Ile Glu Glu
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gaa aaa agg atc ctg cag gtt act aga cca gtt aaa cta gaa gac ctg 669
Glu Lys Arg Ile Leu Gln Val Thr Arg Pro Val Lys Leu Glu Asp Leu
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aga tct aag tct aag atc gcc ttt ggg cag tct atg gat cta cac tat 717
Arg Ser Lys Ser Lys Ile Ala Phe Gly Gln Ser Met Asp Leu His Tyr
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acc aac aat gag ttg gta att ccg tta act acc caa gat gac ttg gac 765
Thr Asn Asn Glu Leu Val Ile Pro Leu Thr Thr Gln Asp Asp Leu Asp
   85                90                95                100

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aaa gct gtg gaa ctg ctg gat cgc agt att cac atg aag agt ctc aag 813
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tca ccg tca cca gaa gat ttg aat aat aca cca ctt ggt gca gag agg 909
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aaa aag cgg cta tct gta gta ggt ccc cct aat agg gat aga agt tcc 957
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                                     Page 19

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CPI-004DVCP3CN

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att Ile 180	gcc Ala 180	cgg Arg 180	aat Asn 180
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agc Ser 185	atc Ile 185	aac Asn 185	agt Ser 185
gaa Glu 190	gga Gly 190	gag Glu 190	ttc Phe 190
att Ile 195	cca Pro 195	gag Glu 195	agc Ser 195
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tct Ser 205	tta Leu 210	agc Ser 210	agc Ser 210
cct Pro 210	gaa Glu 210	aat Asn 210	tct Ser 210
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gat Asp 225	gga Gly 225	gaa Glu 225	agc Ser 225
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cgg Arg 285	aag Lys 285	act Thr 285	ttt Phe 285
cca Pro 285	aga Arg 285	gct Ala 285	aga Arg 285
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gat Asp 310	cac His 310	tcc Ser 310	tta Leu 310
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cca Pro 320	gag Glu 320	tat Tyr 320	gac Asp 320
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atg Met	gag Glu	ctc Leu	tcg Ser 440	cca Pro	ggg Gly	ggt Gly	tca Ser	att Ile 445	aag Lys	gac Asp	caa Gln	cta Leu	aaa Lys 450	gcc Ala	tac Tyr	1821
gga Gly	gct Ala	ctt Leu 455	act Thr	gag Glu	aac Asn	gtg Val	acg Thr 460	agg Arg	aag Lys	tac Tyr	acc Thr	cgt Arg 465	cag Gln	att Ile	ctg Leu	1869
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aaa Lys 485	gga Gly	gca Ala	aat Asn	atc Ile	tta Leu 490	agg Arg	gat Asp	tcc Ser	aca Thr	ggc Gly 495	aat Asn	atc Ile	aag Lys	tta Leu	gga Gly 500	1965
gac Asp	ttt Phe	ggg Gly	gct Ala	agt Ser 505	aaa Lys	cgg Arg	ctt Leu	cag Gln	acc Thr 510	atc Ile	tgt Cys	ctc Leu	tca Ser	ggc Gly 515	aca Thr	2013
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 Gln Asn Leu₃₅ His His Gln Lys Asn₄₀ Arg Met Met Phe Glu₄₅ Ser Asn Leu
 Asn Ile₅₀ Glu Glu Glu Lys Arg₅₅ Ile Leu Gln Val Thr₆₀ Arg Pro Val Lys
 Leu₆₅ Glu Asp Leu Arg Ser₇₀ Lys Ser Lys Ile Ala₇₅ Phe Gly Gln Ser Met₈₀
 Asp Leu His Tyr Thr₈₅ Asn Asn Glu Leu Val₉₀ Ile Pro Leu Thr Thr₉₅ Gln
 Asp Asp Leu Asp₁₀₀ Lys Ala Val Glu Leu₁₀₅ Leu Asp Arg Ser Ile₁₁₀ His Met
 Lys Ser Leu₁₁₅ Lys Ile Leu Leu Val₁₂₀ Val Asn Gly Ser Thr₁₂₅ Gln Ala Thr
 Asn Leu₁₃₀ Glu Pro Ser Pro Ser₁₃₅ Pro Glu Asp Leu Asn₁₄₀ Asn Thr Pro Leu
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 Pro Glu₂₁₀ Asn Ser Gly Ser Gly₂₁₅ Ser Cys Pro Ser Leu₂₂₀ Asp Ser Pro Leu
 Asp Gly Glu Ser Tyr Pro₂₃₀ Lys Ser Arg Met Pro₂₃₅ Arg Ala Gln Ser Tyr₂₄₀
 Pro Asp Asn His Gln₂₄₅ Glu Phe Thr Asp Tyr₂₅₀ Asp Asn Pro Ile Phe₂₅₅ Glu
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 Asp His Ser Leu Ser Thr Ser Ser Gly Ser Ser Val Phe Thr Pro Glu

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gaa aaa agg atc ctg cag gtt act aga cca gtt aaa cta gaa gac ctg 669
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85 90 95 100

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aaa gct gtg gaa ctg ctg gat cgc agt att cac atg aag agt ctc aag 813
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105 110 115

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ata tta ctt gta gta aat ggg agt aca cag gct act aat tta gaa cca 861
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tca ccg tca cca gaa gat ttg aat aat aca cca ctt ggt gca gag agg 909
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                                         Page 24

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cct Pro 215	gaa Glu 215	aat Asn 215	tct Ser 215
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acc Thr 310	cca Pro 310	gag Glu 310	tat Tyr 310
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ccg Pro 350	acc Thr 350	aac Asn 350	tgg Trp 350
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gat Asp 375	acc Thr 375	gga Gly 375	aga Arg 375
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1725			

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atg Met	gag Glu	tat Tyr	atg Met 440	cca Pro	ggg Gly	ggt Gly	tca Ser	att Ile 445	aag Lys	gac Asp	caa Gln	cta Leu	aaa Lys 450	gcc Ala	tac Tyr	1821
gga Gly	gct Ala	ctt Leu 455	act Thr	gag Glu	aac Asn	gtg Val	acg Thr 460	agg Arg	aag Lys	tac Tyr	acc Thr	cgt Arg 465	cag Gln	att Ile	ctg Leu	1869
gag Glu	ggg Gly 470	gtc Val	cat His	tat Tyr	ttg Leu	cat His 475	agt Ser	aat Asn	atg Met	att Ile	gtc Val 480	cat His	aga Arg	gat Asp	atc Ile	1917
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gaa Glu 565	gca Ala	atg Met	gct Ala	gcc Ala	atc Ile 570	ttt Phe	aag Lys	atc Ile	gcc Ala	act Thr 575	cag Gln	cca Pro	acg Thr	aac Asn	cca Pro 580	2205
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 Ala Lys Pro₃₅ Ser Ser Pro Lys Lys₄₀ Gln Asn Asp Val Arg₄₅ Val Lys Phe
 Glu His₅₀ Arg Gly Glu Lys Arg₅₅ Ile Leu Gln Val Thr₆₀ Arg Pro Val Lys
 Leu₆₅ Glu Asp Leu Arg Ser₇₀ Lys Ser Lys Ile Ala₇₅ Phe Gly Gln Ser Met₈₀
 Asp Leu His Tyr Thr₈₅ Asn Asn Glu Leu Val₉₀ Ile Pro Leu Thr Thr₉₅ Gln
 Asp Asp Leu Asp₁₀₀ Lys Ala Val Glu Leu₁₀₅ Leu Asp Arg Ser Ile₁₁₀ His Met
 Lys Ser Leu₁₁₅ Lys Ile Leu Leu Val₁₂₀ Val Asn Gly Ser Thr₁₂₅ Gln Ala Thr
 Asn Leu₁₃₀ Glu Pro Ser Pro Ser₁₃₅ Pro Glu Asp Leu Asn₁₄₀ Asn Thr Pro Leu
 Gly Ala₁₄₅ Glu Arg Lys Lys₁₅₀ Arg Leu Ser Val Val₁₅₅ Gly Pro Pro Asn Arg₁₆₀
 Asp Arg Ser Ser Pro₁₆₅ Pro Pro Gly Tyr Ile₁₇₀ Pro Asp Ile Leu His₁₇₅ Gln
 Ile Ala Arg Asn₁₈₀ Gly Ser Phe Thr Ser₁₈₅ Ile Asn Ser Glu Gly₁₉₀ Glu Phe
 Ile Pro Glu₁₉₅ Ser Met Asp Gln Met₂₀₀ Leu Asp Pro Leu Ser₂₀₅ Leu Ser Ser
 Pro Glu₂₁₀ Asn Ser Gly Ser Gly₂₁₅ Ser Cys Pro Ser Leu₂₂₀ Asp Ser Pro Leu
 Asp Gly₂₂₅ Glu Ser Tyr Pro₂₃₀ Lys Ser Arg Met Pro₂₃₅ Arg Ala Gln Ser Tyr₂₄₀
 Pro Asp Asn His Gln₂₄₅ Glu Phe Thr Asp Tyr₂₅₀ Asp Asn Pro Ile Phe₂₅₅ Glu
 Lys Phe Gly Lys₂₆₀ Gly Gly Thr Tyr Pro₂₆₅ Arg Arg Tyr His Val₂₇₀ Ser Tyr
 His His Gln₂₇₅ Glu Tyr Asn Asp Gly₂₈₀ Arg Lys Thr Phe Pro₂₈₅ Arg Ala Arg
 Arg Thr₂₉₀ Gln Gly Thr Ser Phe₂₉₅ Arg Ser Pro Val Ser₃₀₀ Phe Ser Pro Thr
 Asp His Ser Leu Ser Thr Ser Ser Gly Ser Ser Val Phe Thr Pro Glu

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 Thr Leu Thr Val Thr Asp Ile Ser Pro Pro Ser Arg Ser Pro Arg Ala
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 Arg Val Tyr Leu Cys Tyr Asp Val Asp Thr Gly Arg Glu Leu Ala Val
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 Lys Gln Val Gln Phe Asn Pro Glu Ser Pro Glu Thr Ser Lys Glu Val
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 Arg Ile Val Gln Tyr Tyr Gly Cys Leu Arg Asp Pro Gln Glu Lys Thr
 420 425 430
 Leu Ser Ile Phe Met Glu Tyr Met Pro Gly Gly Ser Ile Lys Asp Gln
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 Arg Gln Ile Leu Glu Gly Val His Tyr Leu His Ser Asn Met Ile Val
 465 470 475 480
 His Arg Asp Ile Lys Gly Ala Asn Ile Leu Arg Asp Ser Thr Gly Asn
 485 490 495
 Ile Lys Leu Gly Asp Phe Gly Ala Ser Lys Arg Leu Gln Thr Ile Cys
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 Ser Pro Glu Val Ile Ser Gly Glu Gly Tyr Gly Arg Lys Ala Asp Ile
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 Trp Ser Val Ala Cys Thr Val Val Glu Met Leu Thr Glu Lys Pro Pro
 545 550 555 560
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 565 570 575
 Pro Thr Asn Pro Lys Leu Pro Pro His Val Ser Asp Tyr Thr Arg Asp
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gccggggatg tagcgggcca acctgctcat gccacagcgc ccggccgcgg ccgagccgga 240
gcctggggag gcggcggggg ccccgagcgc agcccacggc ccccgcgagg agccaggccc 300
gctgccgtcc ccgccgcccg ctccccggc atgcagcccc ggctgcggag gtgacacttc 360
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Ala Leu Asp Ser Ile Met Lys Asp Leu Val Ala Leu Gln Met Ser Arg
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Arg Thr Arg Leu Ser Gly Tyr Glu Thr Met Lys Asn Lys Asp Thr Gly
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His Pro Asn Arg Gln Ser Asp Val Arg Ile Lys Phe Glu His Asn Gly
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gag aga cga att ata gca ttc agc cgg cct gtg aga tac gaa gat gtg      606
Glu Arg Arg Ile Ile Ala Phe Ser Arg Pro Val Arg Tyr Glu Asp Val
                               55          60          65

gag cac aag gtg aca aca gtc ttt ggg cag cct ctt gat ttg cat tat      654
Glu His Lys Val Thr Thr Val Phe Gly Gln Pro Leu Asp Leu His Tyr
                               70          75          80          85

atg aat aat gag ctc tcc atc ctg ttg aaa aac caa gat gat ctc gat      702
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Lys Ala Ile Asp Ile Leu Asp Arg Ser Ser Ser Met Lys Ser Leu Arg
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Ile Leu Leu Leu Ser Gln Asp Arg Asn His Thr Ser Ser Ser Pro His
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tct gga gtg tcc agg cag gtt cgg atc aag cct tcc cag tct gca ggg      846
Ser Gly Val Ser Arg Gln Val Arg Ile Lys Pro Ser Gln Ser Ala Gly
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 Phe Glu His Asn Gly Glu Arg Arg Ile Ile Ala Phe Ser Arg Pro Val
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 Arg Tyr Glu Asp Val Glu His Lys Val Thr Thr Val Phe Gly Gln Pro
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 Leu Asp Leu His Tyr Met Asn Asn Glu Leu Ser Ile Leu Leu Lys Asn
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 Gln Asp Asp Leu Asp Lys Ala Ile Asp Ile Leu Asp Arg Ser Ser Ser
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 Met Lys Ser Leu Arg Ile Leu Leu Leu Ser Gln Asp Arg Asn His Thr
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 Ser Gln Ser Ala Gly Asp Ile Asn Thr Ile Tyr Gln Ala Pro Glu Pro
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 Arg Ser Arg His Leu Ser Val Ser Ser Gln Asn Pro Gly Arg Ser Ser
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 Pro Pro Pro Gly Tyr Val Pro Glu Arg Gln Gln His Ile Ala Arg Gln
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 Gly Ser Tyr Thr Ser Ile Asn Ser Glu Gly Glu Phe Ile Pro Glu Thr
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 Glu Cys Ser Asp Arg Glu Thr Gln Leu Tyr Asp Lys Gly Val Lys Gly
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 Gly Thr Tyr Pro Arg Arg Tyr His Val Ser Val His His Lys Asp Tyr
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 Asn Asp Gly Arg Arg Thr Phe Pro Arg Ile Arg Arg His Gln Gly Asn
 290 295 300
 Leu Phe Thr Leu Val Pro Ser Ser Arg Ser Leu Ser Thr Asn Gly Glu
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 Asn Met Gly Val Ala Val Gln Tyr Leu Asp Pro Arg Gly Arg Leu Arg
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 Ser Ala Asp Ser Glu Asn Ala Leu Thr Val Gln Glu Arg Asn Val Pro
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 Thr Lys Ser Pro Ser Ala Pro Ile Asn Trp Arg Arg Gly Lys Leu Leu
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 Gly Gln Gly Ala Phe Gly Arg Val Tyr Leu Cys Tyr Asp Val Asp Thr
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 Gly Arg Glu Leu Ala Ser Lys Gln Val Gln Phe Asp Pro Asp Ser Pro
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 Gly Ser Val Lys Asp Gln Leu Lys Ala Tyr Gly Ala Leu Thr Glu Ser
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 Val Thr Arg Lys Tyr Thr Arg Gln Ile Leu Glu Gly Met Ser Tyr Leu
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aag Lys	gag Glu	ctc Leu 140	ttc Phe	cac His	gaa Glu	gcc Ala	agg Arg 145	gaa Glu	aga Arg	gcc Ala	tcc Ser	aag Lys 150	gcc Ala	ctg Leu	ggc Gly	1205
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ccc Pro	gac Asp	agc Ser	ctc Leu 205	gct Ala	gag Glu	gag Glu	aag Lys	aaa Lys 210	att Ile	att Ile	ttg Leu	cag Gln	cta Leu 215	ctc Leu	aat Asn	1397
gct Ala	gcc Ala	aca Thr 220	gga Gly	aag Lys	gac Asp	tgc Cys	tca Ser 225	aag Lys	gat Asp	cca Pro	gac Asp	gac Asp 230	gtc Val	ttc Phe	atg Met	1445
gat Asp 235	gcc Ala	ttc Phe	ctg Leu	ctc Leu	ctg Leu	acc Thr 240	aag Lys	cat His	ggg Gly	gac Asp	cga Arg 245	gcc Ala	cgt Arg	gac Asp	tca Ser	1493
gaa Glu	gat Asp	ggc Gly	tgg Trp	ggc Gly	aca Thr	tgg Trp	gaa Glu	gct Ala	cgg Arg	gct Ala	gtc Val	aaa Lys	att Ile	gtg Val	cct Pro	1541

CPI-004DVCP3CN																
250	255								260	265						
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ctg Leu	ctg Leu	gtt Val	gtc Val 285	atg Met	gag Glu	tct Ser	gct Ala	cac His 290	ctc Leu	gta Val	ctt Leu	cag Gln	aga Arg 295	aaa Lys	gcc Ala	1637
ttc Phe	cag Gln	cag Gln 300	tcc Ser	att Ile	gag Glu	ggg Gly	ctg Leu 305	atg Met	act Thr	gta Val	cgc Arg	cat His 310	gag Glu	cag Gln	aca Thr	1685
tct Ser	agc Ser 315	cag Gln	ccc Pro	atc Ile	atc Ile	gcc Ala 320	aaa Lys	ggg Gly	ttg Leu	cag Gln	cag Gln 325	ctc Leu	aag Lys	aac Asn	gat Asp	1733
gca Ala 330	ctt Leu	gag Glu	cta Leu	tgc Cys	aac Asn 335	aga Arg	atc Ile	agc Ser	gat Asp	gcc Ala 340	atc Ile	gac Asp	cgt Arg	gtg Val	gac Asp 345	1781
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gcc Ala	acg Thr	ctg Leu	cag Gln 365	cag Gln	tac Tyr	tac Tyr	cga Arg	gaa Glu 370	gcc Ala	atg Met	att Ile	cag Gln	ggc Gly 375	tac Tyr	aac Asn	1877
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atg Met 410	aat Asn	tac Tyr	gtg Val	ctg Leu	acc Thr 415	aaa Lys	tgc Cys	gag Glu	agc Ser	ggc Gly 420	aga Arg	ggc Gly	aca Thr	aga Arg	ccc Pro 425	2021
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atg Met	aat Asn	gag Glu 460	tgc Cys	atc Ile	ggg Gly	cac His	gtc Val 465	ata Ile	gga Gly	aag Lys	cca Pro	cac His 470	agc Ser	cct Pro	gtc Val	2165
aca Thr 475	gct Ala	atc Ile	cat His	cgg Arg	aac Asn	agc Ser 480	ccc Pro	cgc Arg	cct Pro	gtg Val	aag Lys 485	gtg Val	ccc Pro	cga Arg	tgc Cys	2213
cac His 490	agt Ser	gac Asp	cct Pro	cct Pro	aac Asn 495	cct Pro	cac His	ctc Leu	atc Ile	atc Ile 500	ccg Pro	act Thr	cca Pro	gag Glu	gga Gly 505	2261
ttc agg	agg ggg	tcc agg	agg ggg	agg ggg	agg ggg	agg ggg	agg ggg	agg ggg	agg ggg	agg ggg	agg ggg	agg ggg	agg ggg	agg ggg	agg ggg	2309

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Phe	Arg	Gly	Ser	Ser 510	Val	Pro	Glu	Asn	Asp 515	Arg	Leu	Ala	Ser	Ile 520	Ala	
gca Ala	gaa Glu	ctg Leu	cag Gln 525	ttc Phe	agg Arg	tct Ser	ctg Leu	agt Ser 530	cgg Arg	cac His	tca Ser	agc Ser	ccc Pro 535	acg Thr	gaa Glu	2357
gag Glu	cga Arg	gac Asp 540	gag Glu	cca Pro	gcg Ala	tat Tyr	cct Pro 545	cgg Arg	agt Ser	gac Asp	tca Ser	agt Ser 550	gga Gly	tca Ser	act Thr	2405
cgg Arg	aga Arg 555	agc Ser	tgg Trp	gaa Glu	ctt Leu	cga Arg 560	aca Thr	ctc Leu	atc Ile	agc Ser	cag Gln 565	acc Thr	aaa Lys	gac Asp	tcg Ser	2453
gcc Ala 570	tct Ser	aag Lys	cag Gln	ggg Gly	ccc Pro 575	ata Ile	gaa Glu	gct Ala	atc Ile	cag Gln 580	aag Lys	tca Ser	gtc Val	cga Arg	ctg Leu 585	2501
ttt Phe	gaa Glu	gag Glu	agg Arg	agg Arg 590	tat Tyr	cga Arg	gag Glu	atg Met	agg Arg 595	aga Arg	aag Lys	aat Asn	atc Ile	atc Ile 600	ggc Gly	2549
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ctg Leu	agg Arg	aag Lys 620	gtg Val	aca Thr	ttt Phe	aag Lys	tgg Trp 625	caa Gln	aga Arg	gga Gly	aac Asn	aaa Lys 630	att Ile	gga Gly	gaa Glu	2645
gga Gly 635	cag Gln	tat Tyr	gga Gly	aaa Lys	gta Val	tac Tyr 640	acc Thr	tgc Cys	atc Ile	agt Ser	gtt Val 645	gac Asp	aca Thr	ggg Gly	gag Glu	2693
ctg Leu 650	atg Met	gcc Ala	atg Met	aag Lys	gag Glu 655	att Ile	cga Arg	ttt Phe	cag Gln	cct Pro 660	aac Asn	gac Asp	cac His	aag Lys	act Thr 665	2741
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tac Tyr	atc Ile	ttc Phe 700	atg Met	gag Glu	tac Tyr	tgt Cys	gat Asp 705	gag Glu	ggt Gly	aca Thr	cta Leu	gag Glu 710	gag Glu	gtg Val	tca Ser	2885
cga Arg	ctg Leu 715	ggc Gly	ctg Leu	cag Gln	gag Glu	cac His 720	gtc Val	atc Ile	agg Arg	tta Leu	tat Tyr 725	acc Thr	aag Lys	cag Gln	atc Ile	2933
act Thr 730	gtc Val	gcc Ala	atc Ile	aac Asn	gtc Val 735	ctc Leu	cat His	gag Glu	cac His	ggc Gly 740	atc Ile	gtt Val	cac His	cga Arg	gac Asp 745	2981
atc Ile	aaa Lys	ggt Gly	gcc Ala	aat Asn 750	atc Ile	ttc Phe	ctt Leu	acg Thr	tca Ser 755	tct Ser	gga Gly	cta Leu	atc Ile	aag Lys 760	ctg Leu	3029

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gga gat ttt gga tgc tct gta aaa ctt aaa aac aac gcc cag acc atg 3077
 Gly Asp Phe Gly Cys Ser Val Lys Leu Lys Asn Asn Ala Gln Thr Met
 765 770 775

ccc gga gag gtg aac agc acc cta ggg aca gca gct tac atg gcc cct 3125
 Pro Gly Glu Val Asn Ser Thr Leu Gly Thr Ala Ala Tyr Met Ala Pro
 780 785 790

gaa gtt att acc cga gcc aaa gga gaa ggc cac gga cgt gcg gca gat 3173
 Glu Val Ile Thr Arg Ala Lys Gly Glu Gly His Gly Arg Ala Ala Asp
 795 800 805

atc tgg agt ctg ggg tgc gtc gtc ata gag atg gtg act ggc aag cgg 3221
 Ile Trp Ser Leu Gly Cys Val Val Ile Glu Met Val Thr Gly Lys Arg
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cct tgg cat gag tat gaa cac aac ttt cag att atg tac aag gtg ggg 3269
 Pro Trp His Glu Tyr Glu His Asn Phe Gln Ile Met Tyr Lys Val Gly
 830 835 840

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 Met Gly His Lys Pro Pro Ile Pro Glu Arg Leu Ser Pro Glu Gly Lys
 845 850 855

gcc ttt ctc tcg cac tgc ctg gaa agt gac ccg aag ata cgg tgg aca 3365
 Ala Phe Leu Ser His Cys Leu Glu Ser Asp Pro Lys Ile Arg Trp Thr
 860 865 870

gcc agc cag ctc ctc gac cac gct ttt gtc aag gtt tgc aca gat gaa 3413
 Ala Ser Gln Leu Leu Asp His Ala Phe Val Lys Val Cys Thr Asp Glu
 875 880 885

gag tgaagtgaac cagtccgtgg cctagtagtg tgtggacaga atcccgtgat 3466
 Glu
 890

cactactgta tgtaatat ttt acataaagac tgcagcgcag gcggccttcc taacctccca 3526

ggactgaaga ctacaggggt gacaagcctc acttctgtctg ctctgtctgc ctgctgagtg 3586

acagtgtctga ggttaaagga gccgcacgtt aagtgccatt actactgtac acggccaccg 3646

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aacctcctgg tcgttggtc tgactgtgga gcctccttgt tcgaaagctg caggttttgtt 3826

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 Met Leu Met₃₅ Val Tyr Phe Asp Tyr₄₀ Met Arg Ser Trp Ile₄₅ Gln Met Leu
 Gln Gln₅₀ Leu Pro Gln Ala Ser₅₅ His Ser Leu Lys Asn₆₀ Leu Leu Glu Glu
 Glu Trp Asn Phe Thr Lys₇₀ Glu Ile Thr His Tyr₇₅ Ile Arg Gly Gly Glu₈₀
 Ala Gln Ala Gly Lys₈₅ Leu Phe Cys Asp Ile₉₀ Ala Gly Met Leu Leu₉₅ Lys
 Ser Thr Gly Ser₁₀₀ Phe Leu Glu Ser Gly₁₀₅ Leu Gln Glu Ser Cys₁₁₀ Ala Glu
 Leu Trp Thr₁₁₅ Xaa Ala Asp Asp Asn₁₂₀ Gly Ala Ala Asp Glu₁₂₅ Leu Arg Arg
 Ser Val₁₃₀ Ile Glu Ile Ser Arg₁₃₅ Ala Leu Lys Glu Leu₁₄₀ Phe His Glu Ala
 Arg Glu Arg Ala Ser Lys₁₅₀ Ala Leu Gly Phe Ala₁₅₅ Lys Met Leu Arg Lys₁₆₀
 Asp Leu Glu Ile Ala₁₆₅ Ala Glu Phe Val Leu₁₇₀ Ser Ala Ser Ala Arg₁₇₅ Glu
 Leu Leu Asp Ala₁₈₀ Leu Lys Ala Lys Gln₁₈₅ Tyr Val Lys Val Gln₁₉₀ Ile Pro
 Gly Leu Glu₁₉₅ Asn Leu His Val Phe₂₀₀ Val Pro Asp Ser Leu₂₀₅ Ala Glu Glu
 Lys Lys₂₁₀ Ile Ile Leu Gln Leu₂₁₅ Leu Asn Ala Ala Thr₂₂₀ Gly Lys Asp Cys
 Ser Lys Asp Pro Asp Asp₂₃₀ Val Phe Met Asp Ala₂₃₅ Phe Leu Leu Leu Thr₂₄₀
 Lys His Gly Asp Arg₂₄₅ Ala Arg Asp Ser Glu₂₅₀ Asp Gly Trp Gly Thr₂₅₅ Trp
 Glu Ala Arg Ala₂₆₀ Val Lys Ile Val Pro₂₆₅ Gln Val Glu Thr Val₂₇₀ Asp Thr
 Leu Arg Ser₂₇₅ Met Gln Val Asp Asn₂₈₀ Leu Leu Leu Val Val₂₈₅ Met Glu Ser
 Ala His₂₉₀ Leu Val Leu Gln Arg₂₉₅ Lys Ala Phe Gln Gln₃₀₀ Ser Ile Glu Gly
 Leu Met Thr Val Arg His₃₁₀ Glu Gln Thr Ser Ser₃₁₅ Gln Pro Ile Ile Ala₃₂₀
 Lys Gly Leu Gln Gln Leu Lys Asn Asp Ala Leu Glu Leu Cys Asn Arg

325

330

335

Ile Ser Asp Ala Ile Asp Arg Val Asp His Met Phe Thr Leu Glu Phe
 340 345 350
 Asp Ala Glu Val Glu Glu Ser Glu Ser Ala Thr Leu Gln Gln Tyr Tyr
 355 360 365
 Arg Glu Ala Met Ile Gln Gly Tyr Asn Phe Gly Phe Glu Tyr His Lys
 370 375 380
 Glu Val Val Arg Leu Met Ser Gly Glu Phe Arg Gln Lys Ile Gly Asp
 385 390 395 400
 Lys Tyr Ile Thr Phe Ala Gln Lys Trp Met Asn Tyr Val Leu Thr Lys
 405 410 415
 Cys Glu Ser Gly Arg Gly Thr Arg Pro Arg Trp Ala Thr Gln Gly Phe
 420 425 430
 Asp Phe Leu Gln Ala Ile Glu Pro Ala Phe Ile Ser Ala Leu Pro Glu
 435 440 445
 Asp Asp Phe Leu Ser Leu Gln Ala Leu Met Asn Glu Cys Ile Gly His
 450 455 460
 Val Ile Gly Lys Pro His Ser Pro Val Thr Ala Ile His Arg Asn Ser
 465 470 475 480
 Pro Arg Pro Val Lys Val Pro Arg Cys His Ser Asp Pro Pro Asn Pro
 485 490 495
 His Leu Ile Ile Pro Thr Pro Glu Gly Phe Arg Gly Ser Ser Val Pro
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 Glu Asn Asp Arg Leu Ala Ser Ile Ala Ala Glu Leu Gln Phe Arg Ser
 515 520 525
 Leu Ser Arg His Ser Ser Pro Thr Glu Glu Arg Asp Glu Pro Ala Tyr
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 Pro Arg Ser Asp Ser Ser Gly Ser Thr Arg Arg Ser Trp Glu Leu Arg
 545 550 555 560
 Thr Leu Ile Ser Gln Thr Lys Asp Ser Ala Ser Lys Gln Gly Pro Ile
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 Glu Ala Ile Gln Lys Ser Val Arg Leu Phe Glu Glu Arg Arg Tyr Arg
 580 585 590
 Glu Met Arg Arg Lys Asn Ile Ile Gly Gln Val Cys Asp Thr Pro Lys
 595 600 605
 Ser Tyr Asp Asn Val Met His Val Gly Leu Arg Lys Val Thr Phe Lys
 610 615 620
 Trp Gln Arg Gly Asn Lys Ile Gly Glu Gly Gln Tyr Gly Lys Val Tyr
 625 630 635 640
 Thr Cys Ile Ser Val Asp Thr Gly Glu Leu Met Ala Met Lys Glu Ile
 645 650 655
 Arg Phe Gln Pro Asn Asp His Lys Thr Ile Lys Glu Thr Ala Asp Glu

660 665 670
 Leu Lys Ile Phe Glu Gly Ile Lys His Pro Asn Leu Val Arg Tyr Phe
 675 680 685
 Gly Val Glu Leu His Arg Glu Glu Met Tyr Ile Phe Met Glu Tyr Cys
 690 695 700
 Asp Glu Gly Thr Leu Glu Glu Val Ser Arg Leu Gly Leu Gln Glu His
 705 710 715 720
 Val Ile Arg Leu Tyr Thr Lys Gln Ile Thr Val Ala Ile Asn Val Leu
 725 730 735
 His Glu His Gly Ile Val His Arg Asp Ile Lys Gly Ala Asn Ile Phe
 740 745 750
 Leu Thr Ser Ser Gly Leu Ile Lys Leu Gly Asp Phe Gly Cys Ser Val
 755 760 765
 Lys Leu Lys Asn Asn Ala Gln Thr Met Pro Gly Glu Val Asn Ser Thr
 770 775 780
 Leu Gly Thr Ala Ala Tyr Met Ala Pro Glu Val Ile Thr Arg Ala Lys
 785 790 795 800
 Gly Glu Gly His Gly Arg Ala Ala Asp Ile Trp Ser Leu Gly Cys Val
 805 810 815
 Val Ile Glu Met Val Thr Gly Lys Arg Pro Trp His Glu Tyr Glu His
 820 825 830
 Asn Phe Gln Ile Met Tyr Lys Val Gly Met Gly His Lys Pro Pro Ile
 835 840 845
 Pro Glu Arg Leu Ser Pro Glu Gly Lys Ala Phe Leu Ser His Cys Leu
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 gcacgg atg aga gac gcc atc gcc gag ccg gtg ccc cct cct gcc ctc 168
 Met Arg Asp Ala Ile Ala Glu Pro Val Pro Pro Pro Ala Leu
 1 5 10

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cca Pro	cag Gln	ccc Pro	gag Glu	ccg Pro 35	gat Asp	ccg Pro	gag Glu	tgc Cys	tgc Cys 40	cca Pro	gcg Ala	gcg Ala	agg Arg	cag Gln 45	gag Glu	264
tgc Cys	atg Met	ttg Leu	gga Gly 50	gag Glu	tcg Ser	gct Ala	cgc Arg	aaa Lys 55	agt Ser	atg Met	gaa Glu	tcc Ser	gat Asp 60	cca Pro	gag Glu	312
gac Asp	ttt Phe	tct Ser 65	gat Asp	gaa Glu	aca Thr	aat Asn	aca Thr 70	gag Glu	act Thr	ctc Leu	tac Tyr	ggc Gly 75	acc Thr	tca Ser	ccc Pro	360
cca Pro	agc Ser 80	aca Thr	cct Pro	cga Arg	cag Gln	atg Met 85	aaa Lys	cgc Arg	ctg Leu	tca Ser	gcc Ala 90	aag Lys	cac His	cag Gln	agg Arg	408
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aac Asn	aca Thr	ccg Pro	agt Ser	cag Gln 115	tct Ser	cca Pro	cat His	aaa Lys	gat Asp 120	ttg Leu	ggg Gly	aag Lys	gga Gly	gtg Val 125	gag Glu	504
acc Thr	gtg Val	gaa Glu	gaa Glu 130	tac Tyr	agc Ser	tac Tyr	aag Lys	cag Gln 135	gag Glu	aag Lys	aag Lys	att Ile	cga Arg 140	gca Ala	act Thr	552
ctg Leu	aga Arg	aca Thr 145	acg Thr	gag Glu	cga Arg	gac Asp	cat His 150	aag Lys	aaa Lys	aat Asn	gca Ala	cag Gln 155	tgc Cys	tca Ser	ttc Phe	600
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gtg Val 175	gat Asp	ctc Leu	aat Asn	aag Lys	cct Pro 180	tac Tyr	ctc Leu	agt Ser	ctc Leu	ggc Gly 185	tgt Cys	agc Ser	aat Asn	gcc Ala	aag Lys 190	696
ctg Leu	ccc Pro	gtc Val	tcg Ser	atg Met 195	ccc Pro	atg Met	ccg Pro	ata Ile	gcc Ala 200	aga Arg	act Thr	gca Ala	cgg Arg	cag Gln 205	act Thr	744
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cgc Arg	ctt Leu 225	ttg Leu	cta Leu	aag Lys	ctt Leu	acc Thr	tca Ser 230	gtc Val	tcg Ser	aag Lys	aag Lys	aag Lys 235	gac Asp	agg Arg	gag Glu	840
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atc Ile	atc Ile	aat Asn	gag Glu 290	atc Ile	ctc Leu	acc Thr	ttc Phe	aaa Lys 295	gtt Val	aac Asn	tac Tyr	ggg Gly	agc Ser 300	att Ile	gcc Ala	1032
ttc Phe	tcc Ser	agc Ser 305	aat Asn	gga Gly	gcc Ala	ggg Gly	ttc Phe 310	aac Asn	ggg Gly	ccc Pro	ttg Leu	gta Val 315	gaa Glu	ggc Gly	cag Gln	1080
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ctg Leu	cag Gln	aag Lys	gac Asp 370	tat Tyr	gaa Glu	cgg Arg	tac Tyr	gcc Ala 375	gcc Ala	aag Lys	gac Asp	ttt Phe	gag Glu 380	gac Asp	aga Arg	1272
gtg Val	cag Gln	gcg Ala 385	ctc Leu	tgc Cys	ctg Leu	tgg Trp	ctc Leu 390	aac Asn	atc Ile	acg Thr	aaa Lys	gat Asp 395	cta Leu	aat Asn	cag Gln	1320
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tac Tyr	gag Glu	cca Pro	gag Glu	gac Asp 435	gag Glu	gtc Val	gag Glu	gac Asp	acg Thr 440	gag Glu	gtt Val	gag Glu	ctg Leu	agg Arg 445	gag Glu	1464
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tcc Ser	cag Gln 480	ggc Gly	tgc Cys	gtc Val	tcc Ser	agg Arg 485	aag Lys	ctg Leu	gag Glu	agg Arg	ctc Leu 490	gag Glu	tca Ser	gag Glu	gaa Glu	1608
gat Asp 495	tcc Ser	ata Ile	ggc Gly	tgg Trp	ggg Gly 500	aca Thr	gcg Ala	gac Asp	tgt Cys	ggc Gly 505	cct Pro	gaa Glu	gcc Ala	agc Ser	agg Arg 510	1656
cat His	tgt Cys	ttg Leu	act Thr	tct Ser	atc Ile	tat Tyr	aga Arg	cca Pro	ttc Phe	gtg Val	gac Asp	aaa Lys	gca Ala	ctg Leu	aag Lys	1704

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ggg Gly	tcc Ser	ttg Leu 545	caa Gln	aga Arg	gct Ala	cgt Arg	gta Val 550	gct Ala	ctg Leu	gtg Val	aag Lys	gac Asp 555	gac Asp	cgt Arg	cca Pro	1800
gtg Val	gag Glu 560	ttc Phe	tct Ser	gac Asp	ttt Phe	cca Pro 565	ggg Gly	ccc Pro	atg Met	tgg Trp	ggc Gly 570	tcg Ser	gat Asp	tat Tyr	gtg Val	1848
cag Gln 575	ttg Leu	tcg Ser	gga Gly	aca Thr	cct Pro 580	cct Pro	tcc Ser	tca Ser	gag Glu	cag Gln 585	aag Lys	tgt Cys	agc Ser	gct Ala	gtg Val 590	1896
tcc Ser	tgg Trp	gaa Glu	gaa Glu	ctg Leu 595	aga Arg	gcc Ala	atg Met	gac Asp	ctg Leu 600	cct Pro	tcc Ser	ttt Phe	gag Glu	ccc Pro 605	gcc Ala	1944
ttc Phe	ctg Leu	gtg Val	ctc Leu 610	tgt Cys	cgg Arg	gtc Val	ctg Leu	ctg Leu 615	aac Asn	gtg Val	atc Ile	cac His	gag Glu 620	tgc Cys	ctg Leu	1992
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atc Ile	aaa Lys 640	cag Gln	cta Leu	gtg Val	cga Arg	gag Glu 645	tgt Cys	aaa Lys	gag Glu	gtc Val	cta Leu 650	aag Lys	ggc Gly	ggg Gly	ctc Leu	2088
ctg Leu 655	atg Met	aag Lys	cag Gln	tat Tyr	tac Tyr 660	cag Gln	ttc Phe	atg Met	ctg Leu	cag Gln 665	gag Glu	gtc Val	ctg Leu	ggc Gly	gga Gly 670	2136
ctg Leu	gag Glu	aag Lys	acc Thr	gac Asp 675	tgc Cys	aac Asn	atg Met	gat Asp	gcc Ala 680	ttt Phe	gag Glu	gag Glu	gac Asp	ctg Leu 685	cag Gln	2184
aag Lys	atg Met	ctg Leu	atg Met 690	gtg Val	tat Tyr	ttt Phe	gat Asp	tac Tyr 695	atg Met	aga Arg	agc Ser	tgg Trp	atc Ile 700	caa Gln	atg Met	2232
cta Leu	cag Gln	cag Gln 705	tta Leu	cct Pro	cag Gln	gct Ala	tcc Ser 710	cat His	agc Ser	tta Leu	aaa Lys	aac Asn 715	ctg Leu	cta Leu	gaa Glu	2280
gag Glu	gaa Glu 720	tgg Trp	aat Asn	ttc Phe	acc Thr	aaa Lys 725	gaa Glu	ata Ile	acc Thr	cat His	tat Tyr 730	atc Ile	cgt Arg	ggc Gly	gga Gly	2328
gaa Glu 735	gcg Ala	cag Gln	gct Ala	gga Gly	aag Lys 740	ctt Leu	ttc Phe	tgt Cys	gac Asp	atc Ile 745	gca Ala	ggg Gly	atg Met	ctg Leu	ctg Leu 750	2376
aaa Lys	tcc Ser	aca Thr	ggg Gly	agc Ser 755	ttt Phe	ctg Leu	gaa Glu	tcc Ser	ggc Gly 760	ctg Leu	cag Gln	gag Glu	agc Ser	tgt Cys 765	gct Ala	2424
gag	ctg	tgg	acc	agc	gcc	gac	gac	aac	ggg	gct	gcc	gac	gag	cta	agg	2472

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Glu	Leu	Trp	Thr 770	Ser	Ala	Asp	Asp	Asn 775	Gly	Ala	Ala	Asp	Glu 780	Leu	Arg	
aga Arg	tct Ser	gtc Val 785	atc Ile	gag Glu	atc Ile	agc Ser	cga Arg 790	gca Ala	ctc Leu	aag Lys	gag Glu 795	ctc Leu 795	ttc Phe	cac His	gaa Glu	2520
gcc Ala	agg Arg 800	gaa Glu	aga Arg	gcc Ala	tcc Ser	aag Lys 805	gcc Ala	ctg Leu	ggc Gly	ttt Phe	gct Ala 810	aaa Lys	atg Met	ctg Leu	agg Arg	2568
aag Lys 815	gac Asp	cta Leu	gaa Glu	ata Ile	gca Ala 820	gca Ala	gag Glu	ttc Phe	gtg Val 825	cta Leu 825	tct Ser	gca Ala	tca Ser	gcc Ala	cga Arg 830	2616
gag Glu	ctc Leu	ctg Leu	gac Asp	gct Ala 835	ctg Leu	aaa Lys	gca Ala	aag Lys	cag Gln 840	tat Tyr	gtt Val	aag Lys	gta Val 845	cag Gln 845	att Ile	2664
ccc Pro	ggg Gly	tta Leu	gag Glu 850	aat Asn	ttg Leu	cac His	gtg Val	ttt Phe 855	gtc Val	ccc Pro	gac Asp	agc Ser	ctc Leu 860	gct Ala	gag Glu	2712
gag Glu	aag Lys	aaa Lys 865	att Ile	att Ile	ttg Leu	cag Gln	cta Leu 870	ctc Leu	aat Asn	gct Ala	gcc Ala	aca Thr 875	gga Gly	aag Lys	gac Asp	2760
tgc Cys	tca Ser 880	aag Lys	gat Asp	cca Pro	gac Asp	gac Asp 885	gtc Val	ttc Phe	atg Met	gat Asp 890	gcc Ala 890	ttc Phe	ctg Leu	ctc Leu	ctg Leu	2808
acc Thr 895	aag Lys	cat His	ggg Gly	gac Asp	cga Arg 900	gcc Ala	cgt Arg	gac Asp	tca Ser	gaa Glu 905	gat Asp	ggc Gly	tggt Trp	ggc Gly	aca Thr 910	2856
tggt Trp	gaa Glu	gct Ala	cgg Arg	gct Ala 915	gtc Val	aaa Lys	att Ile	gtg Val	cct Pro 920	cag Gln	gtg Val	gag Glu	act Thr	gtg Val 925	gac Asp	2904
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gcc Ala 975	aaa Lys	ggt Gly	ttg Leu	cag Gln 980	cag Gln 980	ctc Leu	aag Lys	aac Asn	gat Asp	gca Ala 985	ctt Leu	gag Glu	cta Leu	tgc Cys	aac Asn 990	3096
aga Arg	atc Ile	agc Ser	gat Asp	gcc Ala 995	atc Ile	gac Asp	cgt Arg	gtg Val 1000	gac Asp 1000	cac His	atg Met	ttc Phe	acc Thr 1005	ctg Leu 1005	gag Glu	3144
ttc Phe	gat Asp	gct Ala 1010	gag Glu 1010	gtc Val	gag Glu	gag Glu	tct Ser 1015	gag Glu 1015	tcg Ser	gcc Ala	acg Thr	ctg Leu 1020	cag Gln 1020	cag Gln	tac Tyr	3192

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Lys	Glu	Val	Val	Arg	Leu	Met	Ser	Gly	Glu	Phe	Arg	Gln	Lys	Ile	Gly	
	1040					1045					1050					
gac	aaa	tat	ata	agc	ttc	gcc	cag	aag	tgg	atg	aat	tac	gtg	ctg	acc	3336
Asp	Lys	Tyr	Ile	Ser	Phe	Ala	Gln	Lys	Trp	Met	Asn	Tyr	Val	Leu	Thr	
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aaa	tgc	gag	agc	ggc	aga	ggc	aca	aga	ccc	aga	tgg	gcc	acc	caa	gga	3384
Lys	Cys	Glu	Ser	Gly	Arg	Gly	Thr	Arg	Pro	Arg	Trp	Ala	Thr	Gln	Gly	
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Phe	Asp	Phe	Leu	Gln	Ala	Ile	Glu	Pro	Ala	Phe	Ile	Ser	Ala	Leu	Pro	
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gaa	gat	gac	ttc	ttg	agt	ttg	caa	gcc	ctg	atg	aat	gag	tgc	atc	ggg	3480
Glu	Asp	Asp	Phe	Leu	Ser	Leu	Gln	Ala	Leu	Met	Asn	Glu	Cys	Ile	Gly	
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cac	gtc	ata	gga	aag	cca	cac	agc	cct	gtc	aca	gct	atc	cat	cgg	aac	3528
His	Val	Ile	Gly	Lys	Pro	His	Ser	Pro	Val	Thr	Ala	Ile	His	Arg	Asn	
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agc	ccc	cgc	cct	gtg	aag	gtg	ccc	cga	tgc	cac	agt	gac	cct	cct	aac	3576
Ser	Pro	Arg	Pro	Val	Lys	Val	Pro	Arg	Cys	His	Ser	Asp	Pro	Pro	Asn	
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cct	cac	ctc	atc	atc	ccg	act	cca	gag	gga	ttc	agc	acc	cgg	agc	gtg	3624
Pro	His	Leu	Ile	Ile	Pro	Thr	Pro	Glu	Gly	Phe	Ser	Thr	Arg	Ser	Val	
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cct	tcc	gac	gct	cgg	acc	cat	ggc	aac	tct	gtt	gct	gct	gct	gct	gct	3672
Pro	Ser	Asp	Ala	Arg	Thr	His	Gly	Asn	Ser	Val	Ala	Ala	Ala	Ala	Ala	
			1170				1175						1180			
gtt	cgt	gcc	gcc	gcc	acc	act	gct	gct	ggc	cgc	cct	ggc	cca	ggt	ggt	3720
Val	Arg	Ala	Ala	Ala	Thr	Thr	Ala	Ala	Gly	Arg	Pro	Gly	Pro	Gly	Gly	
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Gly	Ser	Ser	Val	Pro	Glu	Asn	Asp	Arg	Leu	Ala	Ser	Ile	Ala	Ala	Glu	
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ctg	cag	ttc	agg	tct	ctg	agt	cgg	cac	tca	agc	ccc	acg	gaa	gag	cga	3864
Leu	Gln	Phe	Arg	Ser	Leu	Ser	Arg	His	Ser	Ser	Pro	Thr	Glu	Glu	Arg	
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gac	gag	cca	gcg	tat	cct	cgg	agt	gac	tca	agt	gga	tca	act	cgg	aga	3912
Asp	Glu	Pro	Ala	Tyr	Pro	Arg	Ser	Asp	Ser	Ser	Gly	Ser	Thr	Arg	Arg	
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gag agg agg tat cga gag atg agg aga aag aat atc atc ggc caa gtg Glu Arg Arg Tyr Arg Glu Met Arg Arg Lys Asn Ile Ile Gly Gln Val 1295 1300 1305 1310	4056
tgc gat acc cct aag tcc tat gat aac gtc atg cat gtt gga ctg agg Cys Asp Thr Pro Lys Ser Tyr Asp Asn Val Met His Val Gly Leu Arg 1315 1320 1325	4104
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att acc cga gcc aaa gga gaa ggc cac gga cgt gcg gca gat atc tgg Ile Thr Arg Ala Lys Gly Glu Gly His Gly Arg Ala Ala Asp Ile Trp 1505 1510 1515	4680
agt ctg ggg tgc gtc gtc ata gag atg gtg act ggc aag cgg cct tgg Ser Leu Gly Cys Val Val Ile Glu Met Val Thr Gly Lys Arg Pro Trp 1520 1525 1530 1535 1540 1545 1550	4728

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1520 1525 1530

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 His Glu Tyr Glu His Asn Phe Gln Ile Met Tyr Lys Val Gly Met Gly
 1535 1540 1545 1550

cac aag cca cca atc ccg gaa agg cta agc cct gaa gga aag gcc ttt 4824
 His Lys Pro Pro Ile Pro Glu Arg Leu Ser Pro Glu Gly Lys Ala Phe
 1555 1560 1565

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 Leu Ser His Cys Leu Glu Ser Asp Pro Lys Ile Arg Trp Thr Ala Ser
 1570 1575 1580

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 Gln Leu Leu Asp His Ala Phe Val Lys Val Cys Thr Asp Glu Glu
 1585 1590 1595

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 Pro Glu Pro Asp Pro Glu Cys Cys Pro Ala Ala Arg Gln Glu Cys Met
 35 40 45
 Leu Gly Glu Ser Ala Arg Lys Ser Met Glu Ser Asp Pro Glu Asp Phe
 50 55 60
 Ser Asp Glu Thr Asn Thr Glu Thr Leu Tyr Gly Thr Ser Pro Pro Ser
 65 70 75 80
 Thr Pro Arg Gln Met Lys Arg Leu Ser Ala Lys His Gln Arg Asn Ser
 85 90 95
 Ala Gly Arg Pro Ala Ser Arg Ser Asn Leu Lys Glu Lys Met Asn Thr
 100 105 110
 Pro Ser Gln Ser Pro His Lys Asp Leu Gly Lys Gly Val Glu Thr Val
 115 120 125
 Glu Glu Tyr Ser Tyr Lys Gln Glu Lys Lys Ile Arg Ala Thr Leu Arg
 130 135 140
 Thr Thr Glu Arg Asp His Lys Lys Asn Ala Gln Cys Ser Phe Met Leu
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Asp	Ser	Val	Ala	Gly	Ser	Leu	Pro	Lys	Lys	Ser	Ile	Pro	Asp	Val	Asp
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Val	Ser	Met	Pro	Met	Pro	Ile	Ala	Arg	Thr	Ala	Arg	Gln	Thr	Ser	Arg
Thr	Asp	Cys	Pro	Ala	Asp	Arg	Leu	Lys	Phe	Phe	Glu	Thr	Leu	Arg	Leu
Leu	Leu	Lys	Leu	Thr	Ser	Val	Ser	Lys	Lys	Lys	Asp	Arg	Glu	Gln	Arg
Gly	Gln	Glu	Asn	Thr	Ala	Ala	Phe	Trp	Phe	Asn	Arg	Ser	Asn	Glu	Leu
Ile	Trp	Leu	Glu	Leu	Gln	Ala	Trp	His	Ala	Gly	Arg	Thr	Ile	Asn	Asp
Gln	Asp	Leu	Phe	Leu	Tyr	Thr	Ala	Arg	Gln	Ala	Ile	Pro	Asp	Ile	Ile
Asn	Glu	Ile	Leu	Thr	Phe	Lys	Val	Asn	Tyr	Gly	Ser	Ile	Ala	Phe	Ser
Ser	Asn	Gly	Ala	Gly	Phe	Asn	Gly	Pro	Leu	Val	Glu	Gly	Gln	Cys	Arg
Thr	Pro	Gln	Glu	Thr	Asn	Arg	Val	Gly	Cys	Ser	Ser	Tyr	His	Glu	His
Leu	Gln	Arg	Gln	Arg	Val	Ser	Phe	Glu	Gln	Val	Lys	Arg	Ile	Met	Glu
Leu	Leu	Glu	Tyr	Met	Glu	Ala	Leu	Tyr	Pro	Ser	Leu	Gln	Ala	Leu	Gln
Lys	Asp	Tyr	Glu	Arg	Tyr	Ala	Ala	Lys	Asp	Phe	Glu	Asp	Arg	Val	Gln
Ala	Leu	Cys	Leu	Trp	Leu	Asn	Ile	Thr	Lys	Asp	Leu	Asn	Gln	Lys	Leu
Arg	Ile	Met	Gly	Thr	Val	Leu	Gly	Ile	Lys	Asn	Leu	Ser	Asp	Ile	Gly
Trp	Pro	Val	Phe	Glu	Ile	Pro	Ser	Pro	Arg	Pro	Ser	Lys	Gly	Tyr	Glu
Pro	Glu	Asp	Glu	Val	Glu	Asp	Thr	Glu	Val	Glu	Leu	Arg	Glu	Leu	Glu
Ser	Gly	Thr	Glu	Glu	Ser	Asp	Glu	Glu	Pro	Thr	Pro	Ser	Pro	Arg	Val
Pro	Glu	Leu	Arg	Leu	Ser	Thr	Asp	Thr	Ile	Leu	Asp	Ser	Arg	Ser	Gln
Gly	Cys	Val	Ser	Arg	Lys	Leu	Glu	Arg	Leu	Glu	Ser	Glu	Glu	Asp	Ser
Ile	Gly	Trp	Gly	Thr	Ala	Asp	Cys	Gly	Pro	Glu	Ala	Ser	Arg	His	Cys
Leu	Thr	Ser	Ile	Tyr	Arg	Pro	Phe	Val	Asp	Lys	Ala	Leu	Lys	Gln	Met
Gly	Leu	Arg	Lys	Leu	Ile	Leu	Arg	Leu	His	Lys	Leu	Met	Asn	Gly	Ser
Leu	Gln	Arg	Ala	Arg	Val	Ala	Leu	Val	Lys	Asp	Asp	Arg	Pro	Val	Glu
Phe	Ser	Asp	Phe	Pro	Gly	Pro	Met	Trp	Gly	Ser	Asp	Tyr	Val	Gln	Leu
Ser	Gly	Thr	Pro	Pro	Ser	Ser	Glu	Gln	Lys	Cys	Ser	Ala	Val	Ser	Trp
Glu	Glu	Leu	Arg	Ala	Met	Asp	Leu	Pro	Ser	Phe	Glu	Pro	Ala	Phe	Leu
Val	Leu	Cys	Arg	Val	Leu	Leu	Asn	Val	Ile	His	Glu	Cys	Leu	Lys	Leu
Arg	Leu	Glu	Gln	Arg	Pro	Ala	Gly	Glu	Pro	Ser	Leu	Leu	Ser	Ile	Lys
Gln	Leu	Val	Arg	Glu	Cys	Lys	Glu	Val	Leu	Lys	Gly	Gly	Leu	Leu	Met
Lys	Gln	Tyr	Tyr	Gln	Phe	Met	Leu	Gln	Glu	Val	Leu	Gly	Gly	Leu	Glu

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Lys	Thr	Asp	660	Asn	Met	Asp	Ala	665	Phe	Glu	Glu	Asp	Leu	670	Gln	Lys	Met
Leu	Met	Val	675	Tyr	Phe	Asp	Tyr	680	Met	Arg	Ser	Trp	Ile	685	Gln	Met	Leu
Gln	Leu	Pro	690	Gln	Ala	Ser	His	695	Ser	Leu	Lys	Asn	Leu	700	Leu	Glu	Glu
705	Trp	Asn	Phe	Thr	Lys	710	Glu	Ile	Thr	His	Tyr	715	Arg	Gly	Gly	Glu	720
				725	Leu	Phe	Cys	Asp	Ile	Ala	Gly	Met	Leu	730	Leu	Lys	735
Gln	Ala	Gly	Lys	740	Leu	Glu	Ser	Gly	745	Leu	Gln	Glu	Ser	Cys	750	Ala	Glu
Thr	Gly	Ser	755	Phe	Leu	Glu	Ser	Gly	760	Leu	Gln	Glu	Ser	Cys	765	Ala	Glu
Trp	Thr	Ser	770	Ala	Asp	Asp	Asn	775	Gly	Ala	Ala	Asp	Glu	780	Leu	Arg	Arg
Val	Ile	Glu	Ile	Ser	Arg	Ala	Leu	Lys	Glu	Leu	Phe	His	Glu	Ala	Arg	800	Arg
785	Glu	Arg	Ala	Ser	Lys	805	Ala	Leu	Gly	Phe	Ala	Lys	Met	Leu	Arg	Lys	815
Leu	Glu	Ile	Ala	820	Ala	Glu	Phe	Val	Leu	825	Ser	Ala	Ser	Ala	Arg	Glu	Leu
Leu	Asp	Ala	Leu	Lys	Ala	Lys	Gln	Tyr	Val	Lys	Val	Gln	Ile	Pro	Gly		
			835					840						845			
Leu	Glu	Asn	Leu	His	Val	Phe	Val	Pro	Asp	Ser	Leu	Ala	Glu	Glu	Lys		
			850					855						860			
Lys	Ile	Ile	Leu	Gln	Leu	870	Leu	Asn	Ala	Ala	Thr	875	Gly	Lys	Asp	Cys	Ser
865	Lys	Asp	Pro	Asp	Asp	Val	Phe	Met	Asp	Ala	Phe	Leu	Leu	Leu	Thr	Lys	
				885						890						895	
His	Gly	Asp	Arg	Ala	Arg	Asp	Ser	Glu	905	Asp	Gly	Trp	Gly	Thr	Trp	Glu	
			900												910		
Ala	Arg	Ala	Val	Lys	Ile	Val	Pro	Gln	Val	Glu	Thr	Val	Asp	Thr	Leu		
			915														
Arg	Ser	Met	Gln	Val	Asp	Asn	Leu	Leu	Leu	Val	Val	Met	Glu	Ser	Ala		
			930														
His	Leu	Val	Leu	Gln	Arg	Lys	Ala	Phe	Gln	Gln	Ser	Ile	Glu	Gly	Leu		
945	Met	Thr	Val	Arg	His	Glu	Gln	Thr	Ser	Ser	Gln	Pro	Ile	Ile	Ala	Lys	
				965						970					975		
Gly	Leu	Gln	Gln	Leu	Lys	Asn	Asp	Ala	Leu	Glu	Leu	Cys	Asn	Arg	Ile		
			980					985						990			
Ser	Asp	Ala	Ile	Asp	Arg	Val	Asp	His	Met	Phe	Thr	Leu	Glu	Phe	Asp		
			995					1000						1005			
Ala	Glu	Val	Glu	Glu	Ser	Glu	Ser	Ala	Thr	Leu	Gln	Gln	Tyr	Tyr	Arg		
			1010					1015						1020			
Glu	Ala	Met	Ile	Gln	Gly	Tyr	Asn	Phe	Gly	Phe	Glu	Tyr	His	Lys	Glu		
1025	Val	Val	Arg	Leu	Met	Ser	Gly	Glu	Phe	Arg	Gln	Lys	Ile	Gly	Asp	Lys	
				1045						1050					1055		
Tyr	Ile	Ser	Phe	Ala	Gln	Lys	Trp	Met	Asn	Tyr	Val	Leu	Thr	Lys	Cys		
			1060					1065						1070			
Glu	Ser	Gly	Arg	Gly	Thr	Arg	Pro	Arg	Trp	Ala	Thr	Gln	Gly	Phe	Asp		
			1075					1080						1085			
Phe	Leu	Gln	Ala	Ile	Glu	Pro	Ala	Phe	Ile	Ser	Ala	Leu	Pro	Glu	Asp		
			1090					1095						1100			
Asp	Phe	Leu	Ser	Leu	Gln	Ala	Leu	Met	Asn	Glu	Cys	Ile	Gly	His	Val		
1105	Ile	Gly	Lys	Pro	His	Ser	Pro	Val	Thr	Ala	Ile	His	Arg	Asn	Ser	Pro	
				1125						1130					1135		
Arg	Pro	Val	Lys	Val	Pro	Arg	Cys	His	Ser	Asp	Pro	Pro	Asn	Pro	His		
			1140					1145						1150			
Leu	Ile	Ile	Pro	Thr	Pro	Glu	Gly	Phe	Ser	Thr	Arg	Ser	Val	Pro	Ser		
			1155					1160						1165			

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Asp Ala Arg Thr His Gly Asn Ser Val Ala Ala Ala Val Arg
 1170 1175 1180
 Ala Ala Ala Thr Thr Ala Ala Gly Arg Pro Gly Pro Gly Gly Gly Asp
 1185 1190 1195 1200
 Ser Val Pro Ala Lys Pro Val Asn Thr Ala Pro Asp Thr Arg Gly Ser
 1205 1210 1215
 Ser Val Pro Glu Asn Asp Arg Leu Ala Ser Ile Ala Ala Glu Leu Gln
 1220 1225 1230
 Phe Arg Ser Leu Ser Arg His Ser Ser Pro Thr Glu Glu Arg Asp Glu
 1235 1240 1245
 Pro Ala Tyr Pro Arg Ser Asp Ser Ser Gly Ser Thr Arg Arg Ser Trp
 1250 1255 1260
 Glu Leu Arg Thr Leu Ile Ser Gln Thr Lys Asp Ser Ala Ser Lys Gln
 1265 1270 1275 1280
 Gly Pro Ile Glu Ala Ile Gln Lys Ser Val Arg Leu Phe Glu Glu Arg
 1285 1290 1295
 Arg Tyr Arg Glu Met Arg Arg Lys Asn Ile Ile Gly Gln Val Cys Asp
 1300 1305 1310
 Thr Pro Lys Ser Tyr Asp Asn Val Met His Val Gly Leu Arg Lys Val
 1315 1320 1325
 Thr Phe Lys Trp Gln Arg Gly Asn Lys Ile Gly Glu Gly Gln Tyr Gly
 1330 1335 1340
 Lys Val Tyr Thr Cys Ile Ser Val Asp Thr Gly Glu Leu Met Ala Met
 1345 1350 1355 1360
 Lys Glu Ile Arg Phe Gln Pro Asn Asp His Lys Thr Ile Lys Glu Thr
 1365 1370 1375
 Ala Asp Glu Leu Lys Ile Phe Glu Gly Ile Lys His Pro Asn Leu Val
 1380 1385 1390
 Arg Tyr Phe Gly Val Glu Leu His Arg Glu Glu Met Tyr Ile Phe Met
 1395 1400 1405
 Glu Tyr Cys Asp Glu Gly Thr Leu Glu Glu Val Ser Arg Leu Gly Leu
 1410 1415 1420
 Gln Glu His Val Ile Arg Leu Tyr Thr Lys Gln Ile Thr Val Ala Ile
 1425 1430 1435 1440
 Asn Val Leu His Glu His Gly Ile Val His Arg Asp Ile Lys Gly Ala
 1445 1450 1455
 Asn Ile Phe Leu Thr Ser Ser Gly Leu Ile Lys Leu Gly Asp Phe Gly
 1460 1465 1470
 Cys Ser Val Lys Leu Lys Asn Asn Ala Gln Thr Met Pro Gly Glu Val
 1475 1480 1485
 Asn Ser Thr Leu Gly Thr Ala Ala Tyr Met Ala Pro Glu Val Ile Thr
 1490 1495 1500
 Arg Ala Lys Gly Glu Gly His Gly Arg Ala Ala Asp Ile Trp Ser Leu
 1505 1510 1515 1520
 Gly Cys Val Val Ile Glu Met Val Thr Gly Lys Arg Pro Trp His Glu
 1525 1530 1535
 Tyr Glu His Asn Phe Gln Ile Met Tyr Lys Val Gly Met Gly His Lys
 1540 1545 1550
 Pro Pro Ile Pro Glu Arg Leu Ser Pro Glu Gly Lys Ala Phe Leu Ser
 1555 1560 1565
 His Cys Leu Glu Ser Asp Pro Lys Ile Arg Trp Thr Ala Ser Gln Leu
 1570 1575 1580
 Leu Asp His Ala Phe Val Lys Val Cys Thr Asp Glu Glu
 1585 1590 1595

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<211> 21

<212> PRT

<213> Artificial Sequence

<220>

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 His Val Gly Leu Arg
 20

<210> 16
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic construct

<220>
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 <222> 3, 5, 6, 8, 10, 11
 <223> Xaa = Any Amino Acid

<400> 16
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 1 5 10

<210> 17
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic Construct

<220>
 <221> misc_feature
 <222> 4
 <223> n = c or t

<220>
 <221> misc_feature
 <222> 6,12,15
 <223> n = Inosine

<400> 17
 garntnatgg cngtnaarca

20

<210> 18
 <211> 23
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<220>
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<220>
 <221> misc_feature
 <222> 3,6,12,18
 <223> n = c or t

<220>
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 <222> 9
 <223> n = t or c

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 <222> 20
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 <400> 18
 ttngcncnt tnatrtcn cn rtg 23

 <210> 19
 <211> 11
 <212> PRT
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 <220>
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 <400> 19
 Gly Tyr Pro Tyr Asp Val Pro Asp Tyr Ala Ser
 1 5 10

 <210> 20
 <211> 56
 <212> DNA
 <213> Artificial Sequence

 <220>
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 <210> 22
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 <213> Artificial Sequence

 <220>
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 <400> 22
 agacttagat ctcaggtctt c 21

<210> 23
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
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<400> 23
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<210> 24
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 <212> DNA
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<400> 24
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<210> 25
 <211> 19
 <212> PRT
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<220>
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<400> 25
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 Phe Ala Gln

<210> 26
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
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<400> 26
 Cys Phe Val Phe Pro Pro Leu Asp Gln Glu Glu Met Glu Ser
 1 5 10

<210> 27
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
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<400> 27

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Thr Thr Tyr Ala Asp Phe Ile Ala Ser Gly Arg Thr Gly Arg Arg Asn
1 5 10 15

Ala Ile His Asp
20